SPEC® CFP2006 Result
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Bull SAS

NovaScale R460 E2
(Intel Xeon X5570, 2.93 GHz)

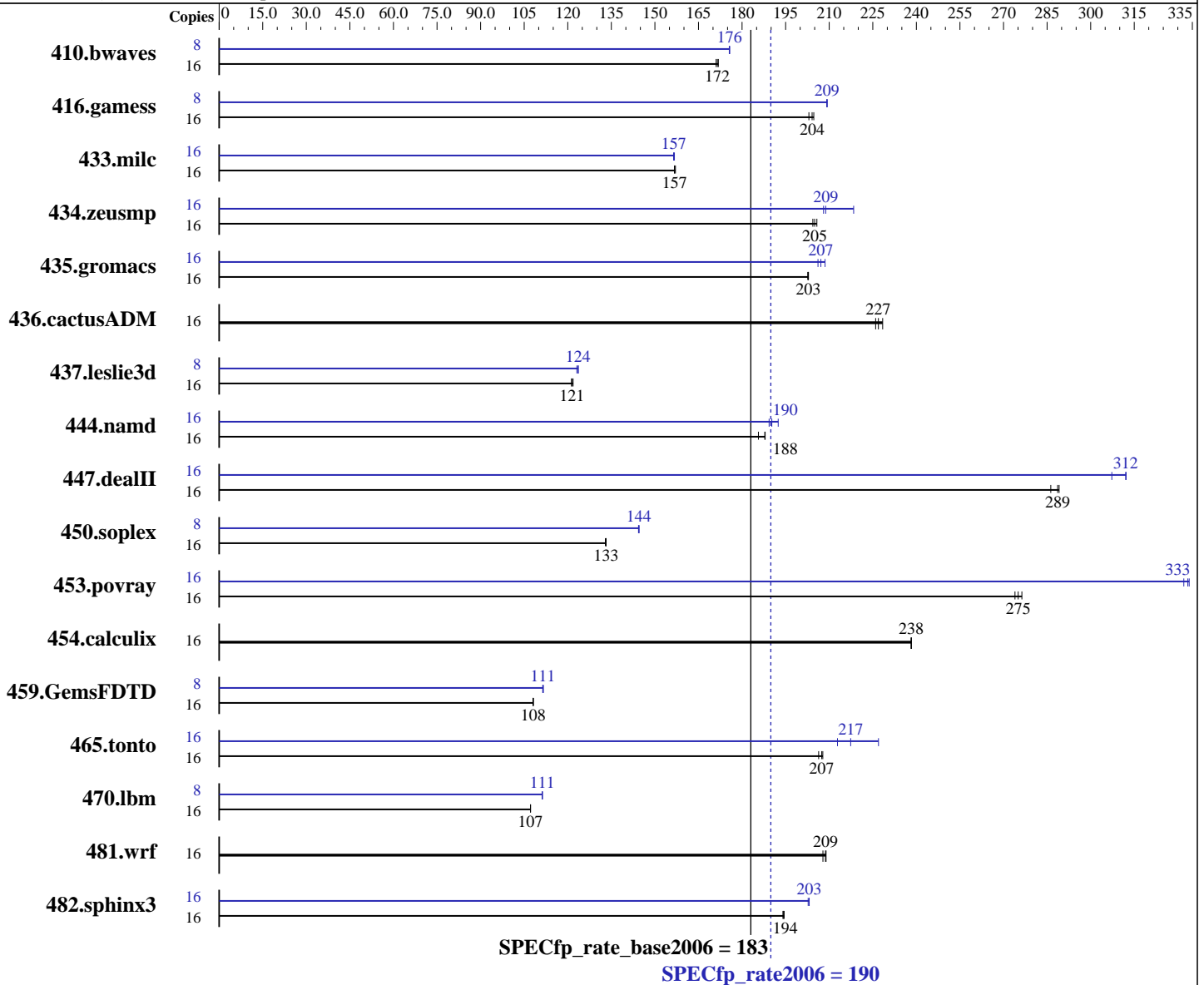$SPECfp®_rate2006 = $ 190

$SPECfp_rate_base2006 = $ 183

CPU2006 license: 20		**Test date:**	Mar-2009
Test sponsor: Bull SAS		**Hardware Availability:**	Apr-2009
Tested by: NEC Corporation		**Software Availability:**	Feb-2009

SPECfp_rate_base2006 = 183

SPECfp_rate2006 = 190

Hardware

CPU Name: Intel Xeon X5570
CPU Characteristics: Intel Turbo Boost Technology up to 3.33 GHz
CPU MHz: 2933
FPU: Integrated
CPU(s) enabled: 8 cores, 2 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable: 1,2 chips
Primary Cache: 32 KB I + 32 KB D on chip per core
Secondary Cache: 256 KB I+D on chip per core

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Software

Operating System: SUSE Linux Enterprise Server 10 (x86_64) SP2 with patch Linux kernel 20090119, Kernel 2.6.16.60-0.34-smp
Compiler: Intel C++ and Fortran Compiler 11.0 for Linux Build 20090131 Package ID: l_cproc_p_11.0.081, l_cprof_p_11.0.081
Auto Parallel: No
File System: ReiserFS
System State: Run level 3 (multi-user)

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L3 Cache:	8 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	48 GB (12 X 4 GB PC3-8500R, 2 rank, CL7, ECC)	Other Software:	Binutils 2.18.50.0.7.20080502
Disk Subsystem:	1x146.5 GB SAS, 15000 RPM		
Other Hardware:	None		

Results Table

Benchmark	Base Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Peak Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	16	**1268**	**172**	1265	172	1271	171	8	619	176	619	176	**619**	**176**
416.gamess	16	1531	205	1543	203	**1535**	**204**	8	749	209	748	209	**749**	**209**
433.milc	16	935	157	**937**	**157**	937	157	16	**938**	**157**	937	157	939	156
434.zeusmp	16	708	206	712	204	**710**	**205**	16	667	218	700	208	**697**	**209**
435.gromacs	16	**563**	**203**	563	203	564	203	16	**552**	**207**	554	206	548	209
436.cactusADM	16	**843**	**227**	837	228	846	226	16	**843**	**227**	837	228	846	226
437.leslie3d	16	**1238**	**121**	1240	121	1234	122	8	**608**	**124**	611	123	608	124
444.namd	16	691	186	**683**	**188**	683	188	16	678	189	667	192	**675**	**190**
447.dealII	16	633	289	639	286	**634**	**289**	16	586	312	596	307	**587**	**312**
450.soplex	16	1002	133	1004	133	**1002**	**133**	8	462	145	462	144	**462**	**144**
453.povray	16	308	276	**309**	**275**	311	274	16	256	332	255	334	**255**	**333**
454.calculix	16	554	238	554	238	**554**	**238**	16	554	238	554	238	**554**	**238**
459.GemsFDTD	16	1570	108	**1570**	**108**	1571	108	8	**761**	**111**	762	111	761	112
465.tonto	16	**759**	**207**	758	208	763	206	16	694	227	**724**	**217**	740	213
470.lbm	16	**2051**	**107**	2051	107	2051	107	8	989	111	**988**	**111**	988	111
481.wrf	16	**856**	**209**	855	209	860	208	16	**856**	**209**	855	209	860	208
482.sphinx3	16	1603	194	**1606**	**194**	1607	194	16	**1536**	**203**	1535	203	1538	203

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

    The config file option 'submit' was used.
     numactl was used to bind copies to the cores

Operating System Notes

    'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run

Platform Notes

    BIOS setting:
    NUMA configuration: Enabled

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General Notes

```
The NEC Express5800/R120a-1(Intel Xeon X5570),
the NEC Express5800/R120a-2(Intel Xeon X5570),
the Bull NovaScale R440 E2 (Intel Xeon X5570, 2.93 GHz) and
the Bull NovaScale R460 E2 (Intel Xeon X5570, 2.93 GHz) models are electronically equivalent.
The results have been measured on a NEC Express5800/R120a-1(Intel Xeon X5570) model.
```

Base Compiler Invocation

C benchmarks:
```
icc
```

C++ benchmarks:
```
icpc
```

Fortran benchmarks:
```
ifort
```

Benchmarks using both Fortran and C:
```
icc ifort
```

Base Portability Flags

```
    410.bwaves: -DSPEC_CPU_LP64
    416.gamess: -DSPEC_CPU_LP64
      433.milc: -DSPEC_CPU_LP64
    434.zeusmp: -DSPEC_CPU_LP64
   435.gromacs: -DSPEC_CPU_LP64 -nofor_main
 436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
   437.leslie3d: -DSPEC_CPU_LP64
      444.namd: -DSPEC_CPU_LP64
     447.dealII: -DSPEC_CPU_LP64
     450.soplex: -DSPEC_CPU_LP64
     453.povray: -DSPEC_CPU_LP64
   454.calculix: -DSPEC_CPU_LP64 -nofor_main
  459.GemsFDTD: -DSPEC_CPU_LP64
      465.tonto: -DSPEC_CPU_LP64
       470.lbm: -DSPEC_CPU_LP64
       481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
    482.sphinx3: -DSPEC_CPU_LP64
```

Base Optimization Flags

C benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

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Test date: Mar-2009
Hardware Availability: Apr-2009
Software Availability: Feb-2009

Base Optimization Flags (Continued)

C++ benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

Fortran benchmarks:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

Benchmarks using both Fortran and C:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc
```

```
482.sphinx3: icc -m32
```

C++ benchmarks (except as noted below):
```
icpc
```

```
450.soplex: icpc -m32
```

Fortran benchmarks (except as noted below):
```
ifort
```

```
437.leslie3d: ifort -m32
```

Benchmarks using both Fortran and C:
```
icc ifort
```

Peak Portability Flags

```
      410.bwaves: -DSPEC_CPU_LP64
      416.gamess: -DSPEC_CPU_LP64
        433.milc: -DSPEC_CPU_LP64
      434.zeusmp: -DSPEC_CPU_LP64
     435.gromacs: -DSPEC_CPU_LP64 -nofor_main
   436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
        444.namd: -DSPEC_CPU_LP64
       447.dealII: -DSPEC_CPU_LP64
      453.povray: -DSPEC_CPU_LP64
     454.calculix: -DSPEC_CPU_LP64 -nofor_main
    459.GemsFDTD: -DSPEC_CPU_LP64
       465.tonto: -DSPEC_CPU_LP64
        470.lbm: -DSPEC_CPU_LP64
        481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

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Peak Optimization Flags

C benchmarks:

    433.milc: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
    `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
    `-fno-alias`

    470.lbm: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch`
    `-auto-ilp32`

    482.sphinx3: `-xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2`

C++ benchmarks:

    444.namd: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
    `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
    `-fno-alias -auto-ilp32`

    447.dealII: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
    `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
    `-unroll2 -ansi-alias -scalar-rep-`

    450.soplex: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
    `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
    `-opt-malloc-options=3`

    453.povray: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
    `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
    `-unroll4 -ansi-alias`

Fortran benchmarks:

    410.bwaves: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch`

    416.gamess: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
    `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
    `-unroll2 -Ob0 -ansi-alias -scalar-rep-`

    434.zeusmp: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
    `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`

    437.leslie3d: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
    `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
    `-opt-malloc-options=3 -opt-prefetch`

    459.GemsFDTD: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
    `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
    `-unroll2 -Ob0 -opt-prefetch`

    465.tonto: `-xSSE4.2(pass 2) -prof-gen(pass 1) -ipo(pass 2) -O3(pass 2)`
    `-no-prec-div(pass 2) -static(pass 2) -prof-use(pass 2)`
    `-unroll4 -auto`

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Peak Optimization Flags (Continued)

Benchmarks using both Fortran and C:

    435.gromacs: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
                `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2)
                `-opt-prefetch -auto-ilp32`

   436.cactusADM: `basepeak = yes`

    454.calculix: `basepeak = yes`

       481.wrf: `basepeak = yes`

The flags files that were used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revG.html
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.20090710.html

You can also download the XML flags sources by saving the following links:
http://www.spec.org/cpu2006/flags/Intel-ic11.0-fp-linux64-revG.xml
http://www.spec.org/cpu2006/flags/NEC-Intel-Linux-Settings-flags-revE.20090710.xml

For questions about this result, please contact the tester.
For other inquiries, please contact webmaster@spec.org.

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